civil defense Technical Bulletin

Appendix 1

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A DIGEST OF TECHNICAL INFORMATION

EMERGENCY EXPOSURES TO NUCLEAR RADIATION

Civil defense authorities recognize that exposure to certain amounts of ionizing radiation will be accepted in some operational situations on a calculated risk basis along with other hazards of war. Trained medical personnel (radiological defense medical officers) will be responsible for evaluating the radiological situation in terms of human hazards and for advising the local civil defense director or his representative. The civil defense director must sufficiently appreciate the effects of radiation so that he will be able to utilize this advice in making operational decisions. Material contained in this bulletin is consistent with the thinking of the military and nonmilitary governmental and private authorities in this field.

As with any hazard, the cardinal principle must be: AVOID ALL UNNECESSARY EXPOSURE. Training activities should involve no more than the maximum permissible exposure of 0.3 r (roentgens) per week; most of them can, and should be, carried out at exposures far less than this.

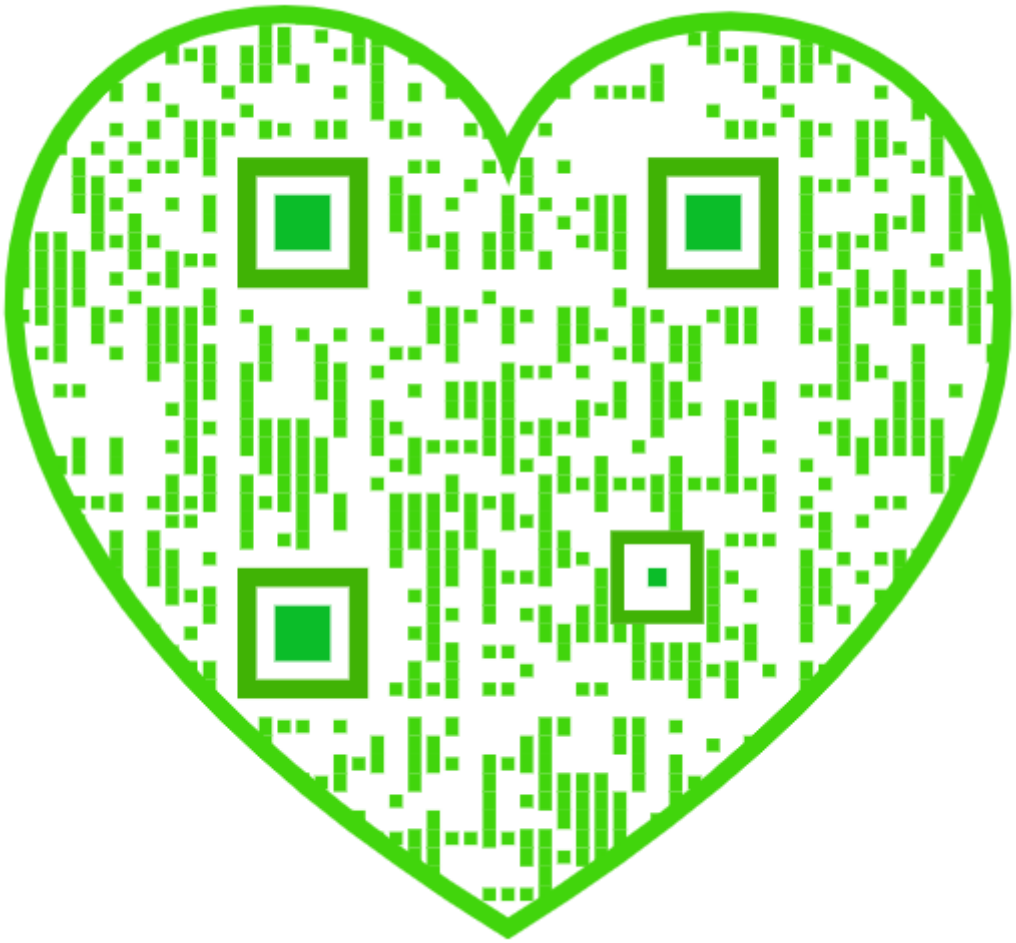
In EMERGENCY operations where appreciable amounts of radiation are present, one should not hesitate to accept an exposure to the whole body of 25 r in a single day.

Operational decisions may be guided by a consideration of the following statements. An acute dosage of 50 r to a group of people will not appreciably affect their efficiency as a working unit. Acute dosage of 100 r will produce nausea and vomiting in occasional individuals, but not to an extent that will render personnel ineffective as groups. People receiving an acute radiation exposure of 100 r or more should be relieved from duty, if possible, and a report made to the staff medical advisor within a week. It should be assumed that if working units receive acute radiation doses substantially above 100 r, they will rapidly become ineffective.

Acute dosage of approximately 150 r or greater can be expected to render personnel as a group ineffective in a few hours through a substantial incidence of nausea, vomiting, weakness, and prostration. Mortality produced by an acute dose of 150 r will be very low, and eventual recovery of physical fitness usually may be expected.

In an emergency it may become necessary to make decisions regarding repeated exposures. The following statement may be used as a "rule of thumb" guide: exposure of 25 r per day at weekly or longer intervals for a total of eight exposures (200 r) may be experienced without serious loss of efficiency due either to illness or significant general deterioration in health and ability. Before each probable re-exposure, the degree of radiation damage already produced and that to be expected should be evaluated. Although not strictly true, to be on the safe side repeated daily exposures should be considered to be directly additive.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF CIVIL AND DEFENSE MOBILIZATION



REFERENCES

Selected OCDM Publications[1]

The following publications can be obtained from the local civil defense organization or purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at nominal cost:

Effects of Nuclear Explosions Upon Drugs, TR-11-1, 1955.
Emergency Measurements of Radioactivity in Food and Water, TB-11-9, Dec. 1952
Fallout and the Winds, TB-11-21, Oct. 1955, Revised Feb. 1956.
Medical Aspects of Nuclear Radiation, TB-11-24, July 1956.
Permissible Emergency Levels of Radioactivity in Water and Food, TB-11-8, Dec. 1952, Reprinted Sept. 1955.
Protection Against Fallout Radiation, TB-11-19, Sept. 1955.
Radiation Physics and Bomb Phenomenology, TB-11-22, Dec. 1955, Revised June 1956.
Radioactive Fallout Problem, The, TB-19-1, June 1955.
Radiological Decontamination in Civil Defense, TM-11-6, 1952, Reprinted July 1955.
Radiological Instruments for Civil Defense, TB-11-20, Sept. 1955.

Other Publications

The Effects of High-Yield Nuclear Explosions, Statement by Lewis L. Strauss, Chairman, and a Report by the U. S. Atomic Energy Commission, Feb. 1955.
The Effects of Nuclear Weapons, U. S. Department of Defense and the U. S. Atomic Energy Commission, June 1957.
Fallout of Radioactive Debris From Atomic Bombs, Circular Letter 16-54, May 27, 1954, Weather Bureau, U. S. Department of Commerce.
Radioactive Fallout, Bulletin of Atomic Scientists, Ralph E. Lapp, Feb. 1955, pp. 45-51.

[1] The designation "Federal Civil Defense Administration" (FCDA) on these publications will be changed to "Office of Civil and Defense Mobilization" (OCDM) as the publications are reprinted or revised.

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